

**AGENDA FOR A MEETING OF THE
ENGINEERING/EQUIPMENT COMMITTEE
OF THE VALLECITOS WATER DISTRICT
TUESDAY, OCTOBER 25, 2022 AT 3:00 P.M.
AT THE DISTRICT OFFICE IN THE BOARD ROOM
201 VALLECITOS DE ORO, SAN MARCOS, CALIFORNIA**

CALL TO ORDER - DIRECTOR HERNANDEZ

NOTICE TO THE PUBLIC

Committee meetings of the Board of Directors of the Vallecitos Water District will be held in the Board Room at the District Offices located at 201 Vallecitos de Oro, San Marcos, California, on the date and time identified above.

Vallecitos Water District is following the guidance issued by the County of San Diego, effective March 1, 2022, which follows the California Department of Public Health guidance which recommends that persons attending public meetings are strongly recommended to wear a face covering in indoor public settings, whether vaccinated or not. The Department of Industrial Relations also strongly recommends, but does not require, the use of face coverings by all visitors.

BROADCAST OF THE MEETING. Members of the public may watch the meeting live via computer or smart device by going to the District's website: www.vwd.org/meetings and clicking on the "Watch Live" icon; however, they will not be able to participate in the meeting remotely.

LISTEN TO THE MEETING. Members of the public may listen to the meeting live on their phone by dialing (888) 788-0099 (Toll Free) or (877) 853-5247 (Toll Free). When prompted, enter the meeting ID and Passcode displayed on the District's website.

PUBLIC COMMENT

Persons wishing to address a matter not on the Agenda may be heard at this time; however, no action will be taken until the matter is placed on a future agenda in accordance with Board policy. Public comments are limited to three minutes. A Request to Speak form is required to be submitted to the Senior Executive Assistant prior to the start of the meeting, if possible. Public comment should start by stating name, address, and topic. The Committee is not permitted during this time to enter into a dialogue with the speaker.

ITEM(S) FOR DISCUSSION

1. FISCAL YEAR 2022/2023 CAPITAL IMPROVEMENT PROGRAM QUARTER 1 UPDATE
2. ASTERRA SATELLITE LEAK DETECTION COLLABORATION PROJECT WITH SAN DIEGO COUNTY WATER AUTHORITY (pp.3-8)
3. TWIN OAKS VALLEY ROAD SUB AREA MASTER PLAN (pp. 9-11)

OTHER BUSINESS

If you have any disability which would require accommodation in order to enable you to participate in this meeting, please call the Senior Executive Assistant at 760.744.0460 ext. 264 at least 48 hours prior to the meeting.

AFFIDAVIT OF POSTING

I, Anthony Flores, Senior Executive Assistant of the Vallecitos Water District, hereby certify that I caused the posting of this Agenda in the outside display case at the District office, 201 Vallecitos de Oro, San Marcos, California by 3:00 p.m., Thursday, October 20, 2022.

Anthony Flores

DATE: OCTOBER 25, 2022
TO: ENGINEERING AND EQUIPMENT COMMITTEE
SUBJECT: ASTERRA SATELLITE LEAK DETECTION COLLABORATION PROJECT WITH SAN DIEGO COUNTY WATER AUTHORITY

BACKGROUND:

The San Diego County Water Authority (SDCWA) initiated a regional asset management effort in 2021 titled “Innovating Asset Management - A Regional Collaboration in San Diego” to leverage the combined power of the region's water agencies to progress asset management. SDCWA scheduled a demonstration with Asterra of emerging technology utilizing satellites to pinpoint possible potable water leaks in the system.

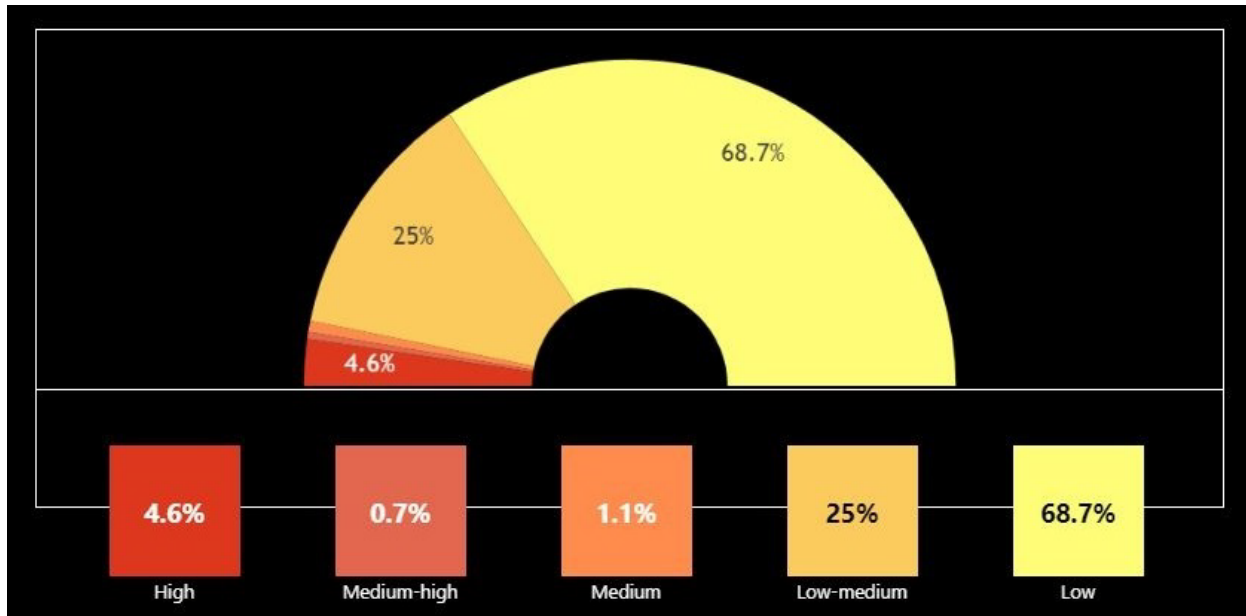
The patented technology uses synthetic aperture radar (SAR) data from satellites to detect moisture laden soils with proprietary algorithms, support staff, and the District’s own GIS water system maps to analyze for possible water leaks. The trained algorithm scores pipe segments exhibiting non-surfacing leaks detected in one or more satellite images and clusters them to direct field crews to search within the zones to pinpoint the exact leak location. Field crews, included in Asterra’s services, uses acoustic leak detection technology to investigate the pinpointed locations, termed Point of Interests (POI’s), to identify leaks. Instead of relying on predictive technology, the Asterra data provides insight into the pipes’ actual condition.

Benefits of a collaborative use of Asterra’s services would reduce costs for participating agencies. After a review of the innovative technology and how it could deliver services efficiently and cost-effectively as part of the District’s own independent infrastructure assessments, including 360 miles of water pipelines, the Board approved a project on October 6, 2021 for these services.

Though the project was originally conceived to contract with Asterra under a Memorandum of Understanding with SDCWA, the District contracted directly with Asterra under a Sole Sourced Professional Services Agreement in the amount of \$63,224 at the January 12, 2022, Boarding meeting.

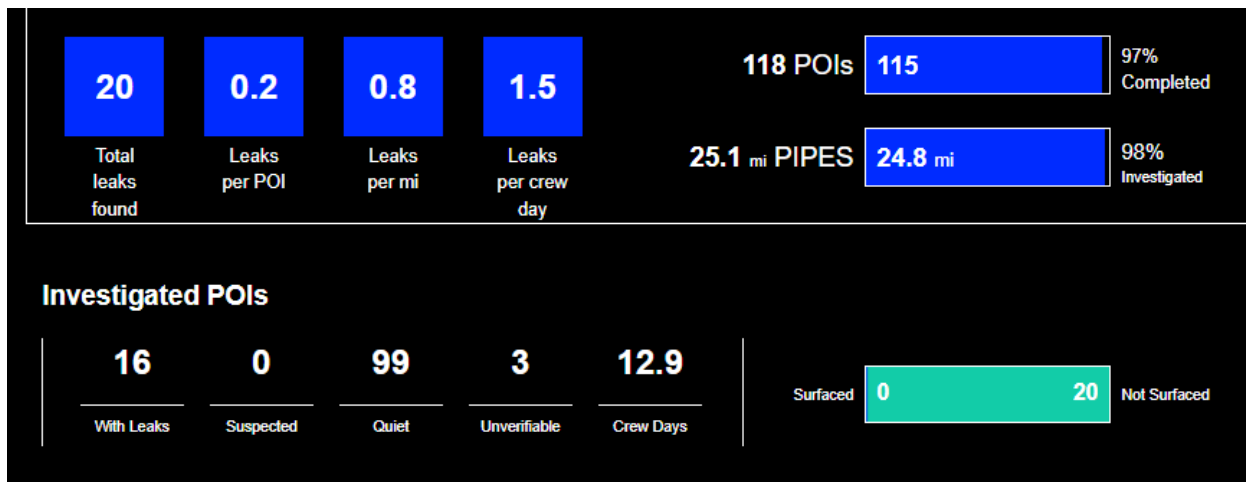
DISCUSSION:

Using the SAR data from images taken months before and collectively used by many water agencies in the San Diego County, Asterra provided a GIS-layer for the 118 POI’s detected within the District’s water system ranked from Low to High as shown in the figure below:



Individual “Leak Sheets” were created for 118 POI’s and an acoustic leak detection crew, a subcontractor to Asterra, was assigned to investigate the locations over a 2-week period. District inspection staff coordinated with the investigative team in the field to provide support.

Of the 118 POI’s investigated, a total of 20 leaks were detected, 18 on the customer side of the meter and 2 on the District’s side of the meter. Additionally, investigation of 3 locations resulted in “unverifiable” conclusions. Asterra provided a web-based dashboard with further analytical data as shown in the figure below:



District staff reviewed the data and determined follow-up actions. For the 2 leaks observed to be on the District’s side of the meter, which consisted of weeping fittings and Angled Meter Stops (AMS), staff from the Meter Department responded and are correcting issues as needed.

For the 18 leaks recorded on the customer side of the meter, 10 of the locations were determined to require no action since meter reading remained consistent and there were no visible signs of leaks. However, for 8 of the locations, where stronger evidence, such as saturated soils or standing water in the meter box, showed the likelihood of a leak, staff notified customers via door hangers and direct interaction of the District’s investigative results and encouraged the homeowners to further inspect their private system and correct any deficiencies. Interactions with customers emphasized correcting deficiencies to help water conservation and reduce their water bills, however any corrections are the homeowner’s responsibility. For the 3 unverifiable locations, inspection staff performed a more thorough site visit to look for visible signs of leaks; none were found. No further action was determined for 2 of these sites, however, 1 has been put on a watch list for possible further inspection using in-pipe assessment tools. In-pipe assessment tools require more complicated logistics to deploy and are significantly more expensive than acoustic leak detection. To be more efficient, staff may explore opportunities to group this work with a larger project in the future.

Overall results from the Asterra technology did not yield a large number of leaks, and those that were observed, at least on the District side of the meter, were insignificant. Number of leaks identified on the customer side of the meter were largely unverifiable and outside the District’s ability to correct. While the technology may have merits in other areas of the world, staff wonders if the specific soil, topography, groundwater, and water system conditions of the District’s and possibly the regions environment, are less conducive to the results Asterra discussed at the beginning of the project. Nevertheless, it is important for continued piloting of emerging technology where practical and feasible.

SDCWA has reached out in recent months to garner interest in another round of SAR images for San Diego County. The District has declined to participate but has let SDCWA know we will revisit possibilities in the future. Of the 23 agencies solicited for another round of imaging in 2022, only 1 responded with positive interest, even though they too, received insignificant results. SDCWA has secured further grant funding to partially compensate agencies for participating in future SAR imaging and analysis, but considering the lack of actionable results, the time for staff to coordinate, and that only 27% of the cost will be covered, staff does not recommend pursuing these services on a regular and continued basis.

FISCAL IMPACT:

There is no fiscal impact to the current FY 22/23 budget. The project was covered under the Asset Management Replacement Schedule Project, identified in the FY 21/22 budget, which also includes costs for development of the Asset Management Plan and on-going soil testing. All invoices and costs were paid in FY 21/22. The FY 21/22 project total cost and budget summary are as follows:

Satellite Leak Detection	\$ 63,224.00
Staff & Overhead	\$ 2,083.80
SDCWA Reimbursement	\$ (16,993.50)
<hr/> Total	<hr/> \$ 48,314.30

RECOMMENDATION:

For information only.

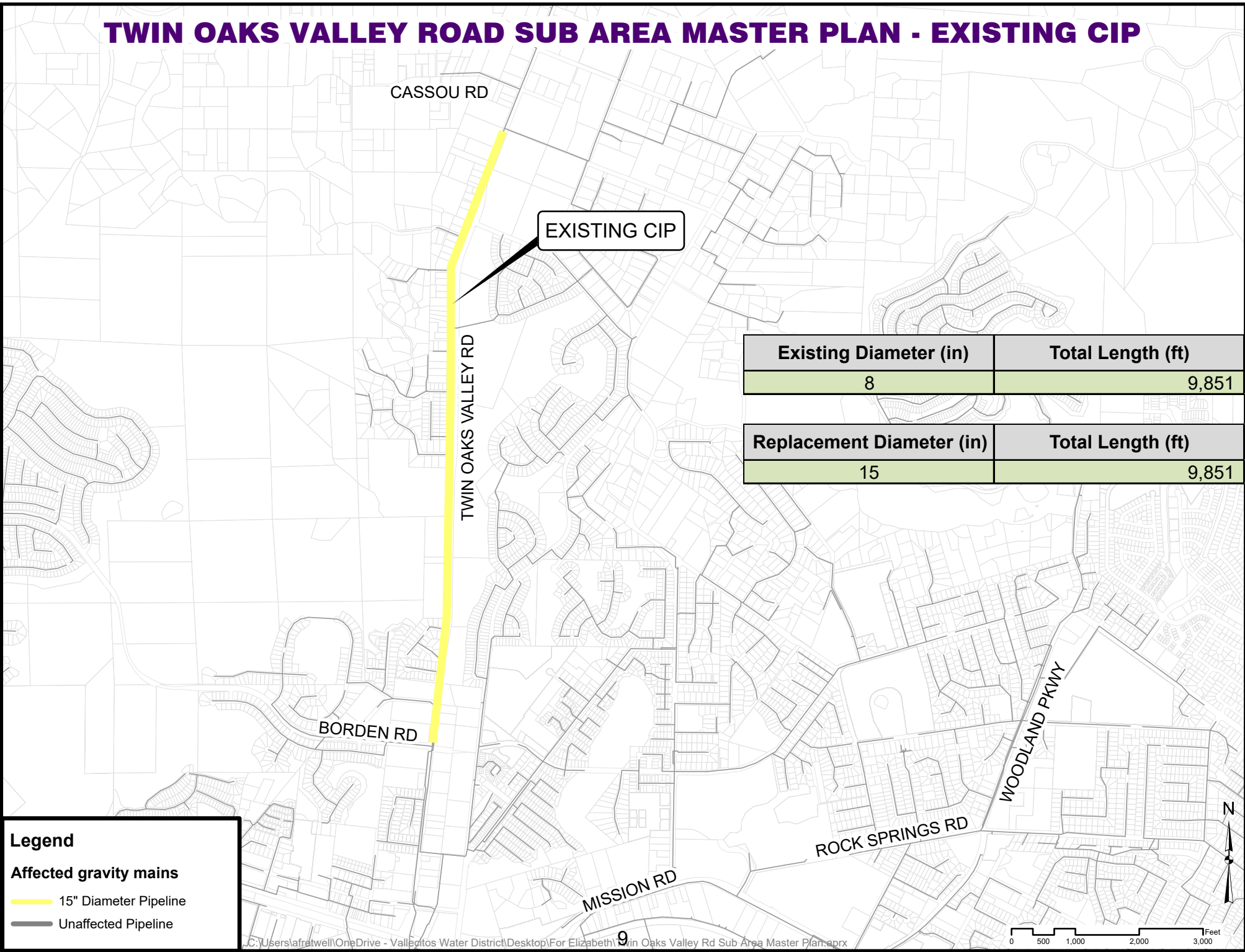
ATTACHMENT:

Asterra Investigative Results

Utilis ID #	Investigation Result	Leak Type	Leak Sub-Type	Pipe Type	Visible?	Address	Investigation Date	Investigation Comments	District Action	Completed
10117	Leak	Customer-Side	Utility loss	Other / Unknown	No	1135, Calle Emparrado, San Marcos, San Diego County, California, 92055, United States	5/6/2022	1135 Calle Emparrado / Leak detected on customer side of meter via sounding probe. Shutoff performed to confirm. Meter does not appear to register waste.	No action required	X
10073	Unverifiable				No	2398, South Rancho Santa Fe Road, San Marcos, San Diego County, California, 92009, United States	5/5/2022	Portion of line is unverifiable due to PRV creating noise throughout system to main road. Neighborhood connections are quiet. 33 connections sounded	Field walk along pipeline performed by Inspection Dept to assess the site - no visible leaks detected. No further action required.	X
10086	Leak	Customer-Side	Pipe	Polyethylene / PVC	No	1199, Calle del Baston, Lake San Marcos, San Diego County, California, 92078, United States	5/4/2022	1169 Calle del Baston / Customer leak detected on service via sounding probe. Large customer leak is observed on customer side shutoff connection.	Customer Service to contact Customer of Investigative Results. 10/5 - Customer repaired the leak	X
10075	Leak	Customer-Side	Pipe	Other / Unknown	No	3299, Costa Alta Drive, Carlsbad, San Diego County, California, 92009, United States	5/4/2022	3298 Costa Alta Dr Irrigation meter at end of street / possible customer leak detected on irrigation meter via sounding probe. Consistent abundant usage observed on multiple visits. Meter does appear to register waste.	Customer Service to contact Customer of Investigative Results. 10/4 - Changed meter. New Meter showing 50+units leak by in 3 days	X
10116	Leak	Customer-Side	Pipe	Other / Unknown	No	1232, Camino del Sol, San Marcos, San Diego County, California, 92055, United States	5/4/2022	1232 Camino Del Sol / leak detected on customer side of meter via sounding probe. Multiple visits find consistent usage. Meter does appear to register waste.	No action required	X
10116	Leak	Customer-Side	Pipe	Other / Unknown	No	1249, Camino del Sol, San Marcos, San Diego County, California, 92055, United States	5/4/2022	1249 Camino Del Sol / leak detected on customer side of meter via sounding probe. Multiple rechecks found consistent usage. Meter does appear to register waste.	No action required	X
10001	Leak	Customer-Side	Utility loss	Other / Unknown	No	2139, Camino Cantera, Vista, San Diego County, California, 92084, United States	5/4/2022	2139 Camino Cantera / leak detected on customer side of meter via sounding probe. Meter does not appear to register waste.	No action required	X
10076	Leak	Customer-Side	Pipe	Other / Unknown	No	6746, Paseo del Vista, Carlsbad, San Diego County, California, 92009, United States	5/2/2022	6748 Paseo Del Vista / leak detected on customer side of meter via sounding probe. Meter does not appear to register waste.	No action required	X
10012	Unverifiable			DIP	No	2035, Marilyn Lane, San Marcos, San Diego County, California, 92069, United States	5/2/2022	VWD has been notified of strange anomaly near last hydrant in area. Noise is suspected to not be a leak, but may be an illegal tap for the Mushroom plant. VWD performed site visit.	Dead-end line installed in 2008. Consider line for EM/CCTV in-pine inspection in the future.	N/A
10018	Leak	Service	Connections-Fittings	Cast Iron	No	1225, Anna Lane, San Marcos, San Diego County, California, 92069, United States	5/2/2022	Leak detected on service via sounding probe. Upon further inspection a small seepage leak may be observed on curbstop to meter.	Meter department to fix. 10/5 - meter replaced. Leak detected, customer notified and leak tablets given to customer. 10/5 - Distrcit leak on AMS. Will replace AMS	X
10061	Leak	Customer-Side	Pipe	Other / Unknown	No	1167, Lauren Place, San Marcos, San Diego County, California, 92078, United States	4/29/2022	1183 Lauren Pl / leak detected on customer side of meter via sounding probe. Meter does not appear to register waste.	No action required	X
10064	Leak	Customer-Side	Pipe	Polyethylene / PVC	No	877, First Light Road, San Marcos, San Diego County, California, 92078, United States	4/29/2022	877 1st Light Rd / leak detected on customer side of meter via sounding probe. Further inspection finds water running into the box from the customer side. Meter does appear to register waste.	Customer Service to contact Customer of Investigative Results. 10/4-Verified leak on customer side	X
10062	Leak	Customer-Side	Pipe	Other / Unknown	No	2070, Golden Eagle Trail, San Marcos, San Diego County, California, 92078, United States	4/28/2022	2070 Golden Eagle Trail / Leak detected on customer side of meter via sounding probe. Meter does appear to register waste.	No action required	X
10034	Leak	Customer-Side	Utility loss	Other / Unknown	No	1300, Rock Springs Road, San Marcos, San Diego County, California, 92069, United States	4/28/2022	1319 Shadow Hills Dr. / Customer leak detected on service via sounding probe. Unable to determine if leak is internal or external. Meter does not appear to register waste.	No action required	X
10094	Leak	Customer-Side	Pipe	Other / Unknown	No	1831, La Plaza Drive, San Marcos, San Diego County, California, 92078, United States	4/27/2022	1831 La Plaza Dr / Leak detected on customer side of meter via sounding probe. Further inspection finds a hose bib with a water leak near by. Meter does not appear to register waste.	Customer Service to contact Customer of Investigative Results. No follow-up required.	X
10097	Unverifiable				No	1002, Cima Drive, San Marcos, San Diego County, California, 92078, United States	4/27/2022	Unverifiable due to second line being in dense vegetation area. 13 connections sounded.	Field walk along pipeline performed by Inspection Dept to assess the site - no visible leaks detected. No further action required.	X
10013	Leak	Customer-Side	Pipe	Other / Unknown	No	720, Old Oak Ridge, San Marcos, San Diego County, California, 92069, United States	4/27/2022	720 Old Oak Ridge / Customer leak detected on service via sounding probe. Unable to determine if leak is internal or external.	Customer Service to contact Customer of Investigative Results. No follow-up required.	X

10035	Leak	Customer-Side	Utility loss	Polyethylene / PVC	No	1821, Rock Springs Road, Escondido, San Diego County, California, 92026, United States	4/26/2022	Customer leak detected on service via sounding probe. Further inspection found water in box. Leak appears to be at or near Customer side meter box. Meter does not appear to register waste.	Customer Service to contact Customer of Investigative Results. 10/5 - Confirmed customer side leak - spoke with customer about repairing leak	X
10105	Leak	Customer-Side	Pipe	Other / Unknown	No	San Marcos, San Diego County, California, 92096, United States	4/26/2022	456 W San Marcos Blvd pool meter / Leak detected on customer side of meter via sounding probe. Meter does appear to register waste.	No action required	X
10117	Leak	Customer-Side	Pipe	Other / Unknown	No	1113, Camino del Sol, San Marcos, San Diego County, California, 92055, United States	4/26/2022	1107 Camino Del Sol / leak detected on customer side of meter via sounding probe. Meter does appear to register waste.	No action required	X
10116	Leak	Service	Connections-Fittings	Other / Unknown	No	1181, Camino del Sol, San Marcos, San Diego County, California, 92055, United States	4/26/2022	Leak detected on meter connection via sounding probe. After further inspection, leak can be seen on the inlet meter spud just passed the curbstop.	Meter department to fix. 10/5 - investigated and leak no-longer present.	X
10120	Leak	Customer-Side	Utility loss	Polyethylene / PVC	No	1388, Corte Bagalso, San Marcos, San Diego County, California, 92055, United States	4/25/2022	Customer leak detected on service via sounding probe. Leak appears to be at or near Customer side shutoff. Meter does not appear to register waste.	Customer Service to contact Customer of Investigative Results. 10/5 - No Leak - May have already been repaired	X
10120	Leak	Customer-Side	Meter	Polyethylene / PVC	No	1391, Corte Bagalso, San Marcos, San Diego County, California, 92055, United States	4/25/2022	Customer leak detected on service via sounding probe. Leak appears to be at or near Customer side of meter box.	Customer Service to contact Customer of Investigative Results. 8/23 - verified no movement on meter	X

TWIN OAKS VALLEY ROAD SUB AREA MASTER PLAN - EXISTING CIP



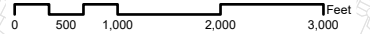
Existing Diameter (in)	Total Length (ft)
8	9,851

Replacement Diameter (in)	Total Length (ft)
15	9,851

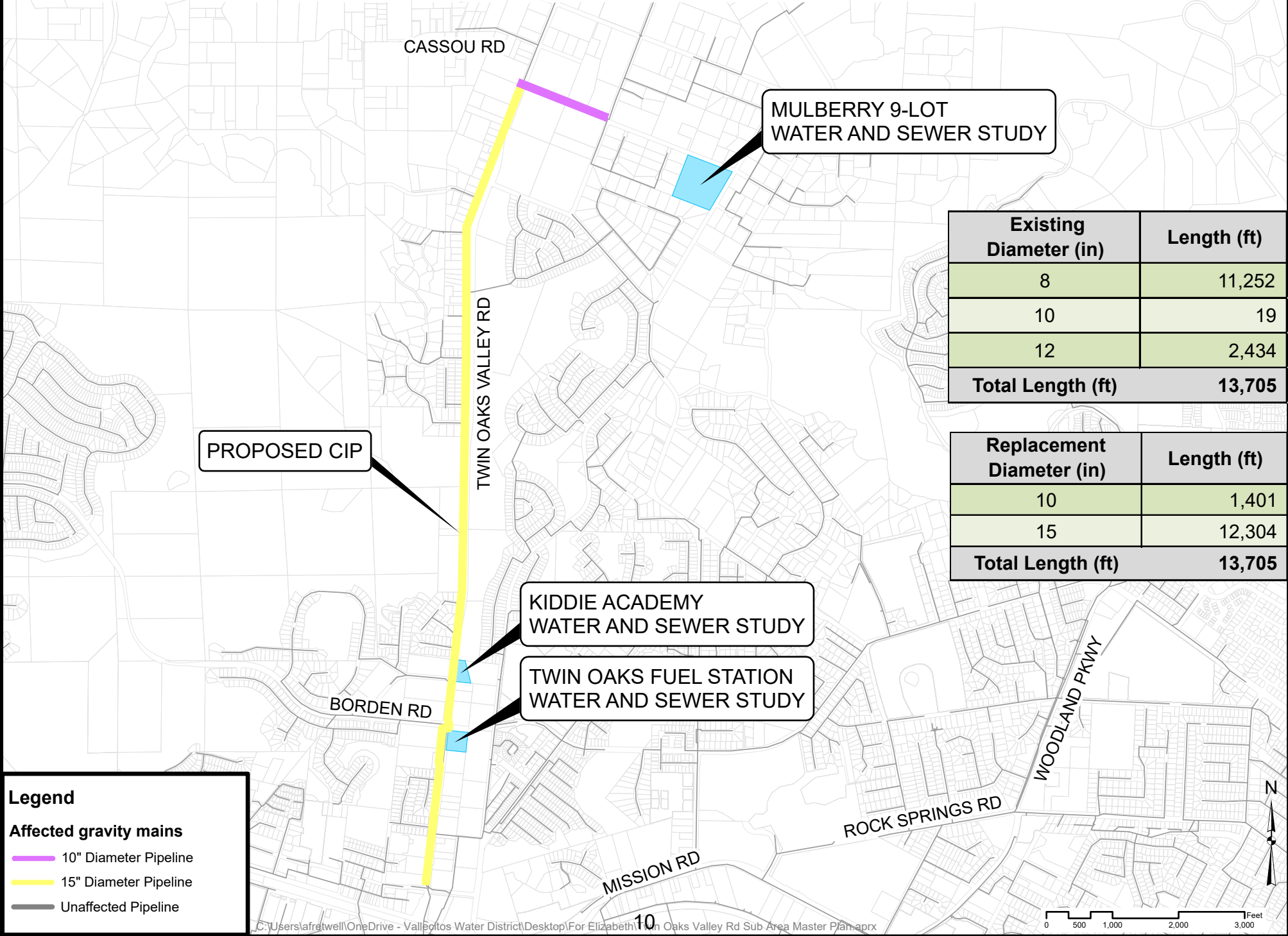
Legend

Affected gravity mains

- 15" Diameter Pipeline
- Unaffected Pipeline



TWIN OAKS VALLEY ROAD SUB AREA MASTER PLAN - PROPOSED CIP



Existing Diameter (in)	Length (ft)
8	11,252
10	19
12	2,434
Total Length (ft)	13,705

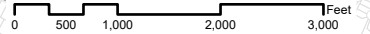
Replacement Diameter (in)	Length (ft)
10	1,401
15	12,304
Total Length (ft)	13,705

Legend


Affected gravity mains

- 10" Diameter Pipeline
- 15" Diameter Pipeline
- Unaffected Pipeline

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



TWIN OAKS VALLEY ROAD SUB AREA MASTER PLAN


TWIN OAKS
RESERVOIR I & II

Legend

Affected Sewer Sheds

-  Sewershed 4C
-  Sewershed 5C
-  Sewershed 6C
-  Sewershed 7C
-  Sewershed 11C

